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VI. *The same Appearance describ'd by John Hadley, Esq; F. R. S.*

THE *Royal Society* hath received so many and so full Accounts of the frequent Northern Lights, which of late Years have been seen in *Europe*, and particularly of that remarkable one of the 8<sup>th</sup> of *October* last, that it seems needless at present to give a minute Description of the whole Appearance. I shall therefore only take notice of a few Particulars, which either have been omitted by others, or by some remarkable Circumstances attending them, seem most likely to be of use to those who employ their Thoughts in attempting to discover the Nature and Causes of these *Phænomena*.

The first sight I had of this Appearance, was about half an hour after Seven of the Clock; at which time it had nothing remarkable to distinguish it from those others which had been observed almost every Evening for some time, except a dusky Redness arising from the Western Extremity of the luminous Arch; and that at the same time there was seen another like hazy Arch low to the Southward, fainter, but more steady than that to the North. I judg'd the highest Point of it to be something more elevated than the Sun at Noon about the Winter Solstice.

In a short time after, the Northern Arch was risen considerably higher from the Horizon, and continued to advance towards the Zenith, till 8; when in one part it pass'd among the uppermost Stars of *Cassiopeia*, and in another close below the bright Star in the *Harp*.

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The Heavens underneath look'd clear, and of a dark Blue, having no resemblance either of Dawn or dusky Cloud, and the Pyramids of Light seem'd to spring immediately out of the pure Sky. The Arch it self was very irregular, being full of Notches, some greater, some less. The dusky Red on the West was changed to a light Crimson, and was answer'd by the like Colour on the East. The Rays issuing from both Extremities, were thick and bright, appearing as if there were several one behind another. They were also generally longer than the rest, and pointed considerably to the South of the Zenith. After 8, the Northern Arch retir'd again downwards, till it came among the Stars of the *Great Bear*; when the whole Scene was changed on a sudden, and Rays were darted up from all sides, and form'd that Crown-like, or Star-like Figure which has been sufficiently describ'd.

The intermediate *Area* (left between the innermost Extremities of the Rays coming from different Quarters, which very rarely, if ever, joyn'd) was of an irregular Figure, commonly inclining to an Oval, whose longest Diameter lay East and West. Sometimes it appear'd as clear Sky, at other times was fill'd with a thin white Cloud, and that Cloud was often divided into two Parts, by an uneven crooked Line, running likewise East and West.

The Rays which immediately surrounded this void Space, were of no great Length, and very unstable: Yet two or three times, when they continu'd steady enough to afford an Opportunity of considering them attentively, their outermost Extremities were sensibly carried Southwards, the Center it self remaining, to appearance, fix'd.

The Southern Quarter was fill'd with continual Flashings of Light. These followed one another very quick, and were propagated upwards from the aforementioned Arch with great Swiftneſs, each of them leaving in ſome parts of the Space it paſſ'd through, a faint, and very tranſient Whitenefs, which preſently vaniſh'd, and was quickly renew'd, uſually in the very ſame Track, by the next ſucceeding Flash. Yet none of thoſe Tracks were in any degree direct and uniform ; but all very irregular and broken.

The Central Figure ſometimes diſappear'd for a while, and then returned again. Whether it always retained the ſame Situation with reſpect to our Horizon, I cannot depend on the Exactneſs of my Obſervations enough to determine. They were as follow.

About half an hour paſt Eight, the Center, as well as I could judge by my Eye, was very near a Star of the fifth Magnitude, placed by *Hevelius* at the End of the *Lizard's Tail*, whoſe preſent Right Aſcenſion is about  $331^{\circ}$ , and Decl.  $36^{\circ}$  and an half N. At Nine, it was at the Northern Point of an *Iſoſceles Triangle*, whoſe Baſe was a Line joyning the Star in *Pegasus* Shoulder, call'd *Scheat*, and the brighteſt of thoſe in his Knee ; the Perpendicular from the Center being in proportion to the Baſe, about as 3 to 2. At 9h. 15' the *Triangle* made between that and the two foremention'd Stars was become Right-angled at *Scheat*, the Diſtance being not much alter'd. At Ten, it was directly between the Zenith and *Andromeda's Head*, at a Diſtance from this Star not ſenſibly different from what it had kept from the Northermoſt of the Two forementioned.

According to the first of these Observations, the Central Point must have been very near the Meridian, and about  $15^{\circ}$  South of the Zenith of the Place where I was ; which is a few Minutes directly North from *London*. The three last agree pretty well with one another, to carry it between 2 and 3 Degrees further Southward, and to give it a perpendicular Distance of 3 or 4 Degrees of a great Circle from the Meridian Eastward.

In the remarkable Appearance of this kind which happen'd the 6th of *March* 171 $\frac{5}{8}$ , I observ'd the like Center at near half an hour after 7 o' clock, to be something nearer the Zenith, than the bright Star in the Northern Head of the *Twins*, and to be more Easterly by about half the Distance between that and the Star in *Pollux's* Head. By comparing this Observation with the Situation of the Star at that time, the Center appears to have been about 16 or 17 Degrees from the Zenith, and about 2 or 3 distant from the Meridian Circle towards the East.